CLINICAL SUMMARY

Disinfection testing of the new Maxi Sky 2 Infection Control components

Healthcare-associated infections (HAIs) cause untold suffering to those affected and are a significant source of complications across the continuum of care while being associated with a substantial increase in health care costs.

In the healthcare setting contaminated non-critical medical devices and equipment can play a role in the transmission of potentially harmful microorganisms. Contaminated equipment is touched and microorganisms are transferred onto caregivers hands only to be transferred to another patient or device.

Regular and thorough cleaning of medical devices and equipment disrupts transmission to the caregiver and patient by decreasing the amount of microorganisms present. This decreases the risk of infection.

While hand hygiene is the single most effective means of decreasing healthcare associated infections, the need for easy, effective cleaning and disinfection of non-critical medical devices and equipment is also important.

Ceiling Lifts

Ceiling lifts are devices designed to improve efficiency and safety of transfers of dependent patients and residents across a variety of care settings. While patients will usually be lifted using their own designated sling, the lift itself is frequently used with multiple patients, this is where cross contaminations can occur. Areas on the ceiling lift such as the spreader bar, strap connecting the spreader bar to the motor, the handset, handset cable and emergency stop function are areas on the lift which are frequently touched by caregivers and sometimes by patients/residents hence it is important to ensure that these 'high touch points' can be easily and frequently cleaned. See Image 1.

Tracks and motors which are positioned well away from the resident/patient (and sometimes integrated into the ceiling themselves) will tend to only be touched whilst undergoing routine maintenance by specialist engineers and are not in frequent contact with the caregiver or patient/resident. Whilst the cleaning of such is important they should be done so in accordance with the facilities general environmental policy for cleaning and disinfection, such as procedures for cleaning curtain tracks etc.

Ceiling lifts are defined as a noncritical item for cleaning purposes. Cleaning of lifts should follow the manufacturer's instructions and local infection control policy.

Image 1: Overview of the Arjo Ceiling Lifter Maxi Sky 2 infection Control.

Maxi Sky® 2 Infection Control

To assist caregivers to more easily clean and disinfect the areas of the ceiling lift frequently touched by themselves and also their patient/resident, new non-porous materials have been integrated into the new Maxi Sky 2 Infection Control ceiling lift.

Table 1 – Results for nylon strap (sample #1)

STRAIN	TIME POINT (MINUTES)	LOG 10 REDUCTION TO CONTROL		PASS / FAIL
		ACCEPTEANCE CRITERIA	RESULT	
P. AERUGINOSA	3	≥6.0	5.2	FAIL
	5	≥6.0	4.8	FAIL
	10	≥6.0	5.4	FAIL
	20	≥6.0	6.3	PASS
S. AUREUS	3	≥6.0	5.0	FAIL
	5	≥6.0	5.6	FAIL
	10	≥6.0	5.7	FAIL
	20	≥6.0	6.2	PASS
E. COLI	3	≥6.0	5.5	FAIL
	5	≥6.0	6.4	PASS
	10	≥6.0	6.3	PASS
	20	≥6.0	6.7	PASS
K. PNEUMONIAE	3	≥6.0	6.0	PASS
	5	≥6.0	5.6	FAIL
	10	≥6.0	6.2	PASS
	20	≥6.0	6.5	PASS

Table 2 – Results for the non-porous strap (sample #2)

STRAIN	TIME POINT (MINUTES)	LOG 10 REDUCTION TO CONTROL		PASS / FAIL
		ACCEPTEANCE CRITERIA	RESULT	
P. AERUGINOSA	3	≥6.0	≥6.7	PASS
	5	≥6.0	≥6.7	PASS
	10	≥6.0	≥6.7	PASS
	20	≥6.0	≥6.7	PASS
S. AUREUS	3	≥6.0	≥6.7	PASS
	5	≥6.0	≥6.7	PASS
	10	≥6.0	≥6.7	PASS
	20	≥6.0	≥6.7	PASS
E. COLI	3	≥6.0	≥6.8	PASS
	5	≥6.0	≥6.8	PASS
	10	≥6.0	≥6.8	PASS
	20	≥6.0	≥6.8	PASS
K. PNEUMONIAE	3	≥6.0	≥6.8	PASS
	5	≥6.0	≥6.8	PASS
	10	≥6.0	≥6.8	PASS
	20	≥6.0	≥6.8	PASS

The Evidence

An Independent Test Facility (Toxikon, Massachusetts, USA) undertook a comparison study to evaluate the effect of disinfection and cleaning characteristics of the two different composite materials, the nylon lift strap (#1) and the new non-porous lift strap (#2). The study also included a low level disinfection 'time kill' of the four specific microorganisms tested.

The bacterial strains chosen for the tests were selected since they are representative of the common strains found in health centres/hospitals whilst also known as being hard to disinfect.

- Pseudomonas aeruginosa
- Staphylococcus aureus
- Escherichia coli
- Klebsiella pneumoniae

Three samples of each strap (#1 and #2) were infected with the four common microorganisms named above and left to dry for 20 - 25 minutes which allowed the substrate to adhere to the straps prior to disinfection. The contaminated straps were then sprayed with 1,000 ppm low level disinfection bleach solution, wiped with a bleach-saturated, lint free cloth, and allowed to stand for the required exposure time. After contamination and subsequent use of the bleach disinfection both test straps were evaluated for surviving organisms, the 'bioload,' at four different time intervals, 3 minutes, 5 minutes, 10 minutes and 20 minutes.

An additional three test straps were similarly infected but not exposed to the disinfectant, they acted as positive controls. One test strap was not contaminated but subjected to 22 minute bleach exposure and acted as a negative control. Both controls were tested for microorganism growth at the 20 minute time interval.

The Results

The results of the testing on the nylon strap showed significant antimicrobial efficacy against all of the 4 strains after the 20 minute exposure time (Table 1).

The results of the study showed that for the non-porous strap (#2) met all the acceptance criteria as early as three minutes and passed all subsequent time points for each bacterial strain, i.e. there was significant antimicrobial efficacy against all strains of contaminant at all exposure times (Table 2).

Conclusion

A comparison study was conducted to evaluate the effect of disinfection on two different composite materials used as straps in the Maxi Sky 2 ceiling lift. The study identified a reduced time kill for four bacterial strains on the new Infection Control strap, compared to the nylon strap after disinfecting with a commonly found disinfectant .

Clinical Implications

The Maxi Sky 2 Infection Control strap is a non-porous material that does not absorb dirt and contaminants and hence can be more easily disinfected.

Arjo.A00073.1.0.INT.EN March 2019. Maxi Sky® 2 Infection Control is a trademark of Arjo AB.
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